

Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Observation of anomalous temperature dependence of spectrum on small Fermi surfaces in a BiS₂-based superconductor¹ L.K. ZENG, X.B. WANG, J. MA, P. RICHARD, S.M. NIE, H.M. WENG, N.L. WANG, Beijing National Laboratory for Condensed Matter Physics, and Institute of Physics, Chinese Academy of Sciences, Beijing 100190, China, Z. WANG, Department of Physics, Boston College, Chestnut Hill, Massachusetts 02467, USA, T. QIAN, H. DING, Beijing National Laboratory for Condensed Matter Physics, and Institute of Physics, Chinese Academy of Sciences, Beijing 100190, China — We have performed an angle-resolved photoemission spectroscopy study of the BiS₂-based superconductor Nd(O,F)BiS₂. Two small electron-like Fermi surfaces around X ($\pi, 0$) are observed, which enclose 2.4% and 1.1% of the Brillouin zone area, respectively, corresponding to an electron doping of 7% per Bi site. The low-energy spectrum consists of a weakly-dispersing broad hump and a dispersive branch, which follows well the calculated band dispersion. This hump is drastically suppressed with increasing temperature, while the dispersive branch is essentially unaffected. The anomalous thermal effect indicates a highly interacting electronic state, in which the superconducting pairing develops

¹CAS (2010Y1JB6), MOST (2010CB923000, 2011CBA001000, 2011CB921701, 2013CB921700, 2011CBA00108, and 2012CB821403), NSFC (11004232, 11050110422, 11274362, 11234014, 11120101003, 11074291, 11274359, and 11104339), and DOE (DE-FG02-99ER45747 and DE-SC0002554).

L.K. Zeng
Beijing National Laboratory for Condensed Matter Physics, and
Institute of Physics, Chinese Academy of Sciences,
Beijing 100190, China

Date submitted: 13 Nov 2014

Electronic form version 1.4